Practice: 400 - Bivalve Aquaculture Gear and Biofouling Control

Scenario: #1 - Infaunal Culture Yr-1

Scenario Description:

The acquisition and use of additional aquaculture gear and biofouling control on 1 acre of bivalaves, usually clams that are seeded in the substrate, in intertidal marine areas where biofouling of aquaculture production gear occurs. The biofouled gear is removed from the farm site and taken on land to be cleaned using environmentally appropriate biofoul control methods, including but not limited to air drying, brine dip, vinegar dip, fresh water dip, sweeping, power washing, and/or a combination of the aforementioned methods. The gear is cleaned and stored on land at an acceptable location, such as a heavy use area suitable for the size and intensity of the aquaculture operation. The planned practice will meet the current 400 conservation practice standard. Implementation will result in the proper rate, method and timing of gear and biofouling controls, including increased level of monitoring, frequency of cleaning, cycling/rotating and hauling gear, disposing of waste gear, and keeping records demonstrating implementation of the 400 criteria. Payment for implementation is to defray the costs of redundant gear, increased labor above normal operating procedures and recordkeeping for the first year of the growth cycle.

Before Situation:

Aquaculture gear (predator exclusion apparatus) is overgrown with biofouling organisms; water flow and food supply is significantly reduced endangering shellfish health and growth. Increased drag increases risk of gear escaping into the marine environment; escaped gear presents entanglement hazards to marine wildlife. Organic loading and aquatic nuisance species release are negative impacts of in-water gear cleaning activities.

After Situation:

The aquaculturist has additional gear (approximately 20%) which is cycled with biofouled gear in the water. The biofouled gear is cleaned using environmentally appropriate biofoul control methods, including but not limited to air drying, brine dip, vinegar dip, fresh water dip, sweeping, power washing, or a combination of methods. The gear is cleaned and stored on land at an acceptable location for the size and intensity of the aquaculture operation. Damaged gear is removed from the farm site and transported on shore for proper disposal. Records documenting the cycling of gear are maintained. Additional conservation practices such as 561- Heavy Use Area, and 422-Hedgerow Planting should be considered and planned under the respective scenarios. The material removed from the cage will be land applied, composted, or land filled as appropriate. The influx of biofouling to the marine environment as a result of cleaning gear is eliminated.

Scenario Feature Measure: 20 beds/acre; 900sf/bed

Scenario Unit: Acre

Scenario Typical Size: 1

Scenario Cost: $10,511.68 **Scenario Cost/Unit:** $10,511.68

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price ($/unit)	Quantity	Cost
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	$24.74	32	$791.68
Materials						
Shellfish Predation Screen, seed in-ground culture	1891	Preditor control ground cover, medium weight high density polyethylene, 3/8" mesh, typical width is 6', lenths from 50'-165'. Can be reused after fouling dries. Includes materials and shipping only.	Square Foot	$0.54	18000	$9,720.00

Practice: 400 - Bivalve Aquaculture Gear and Biofouling Control

Scenario: #2 - Infaunal Culture Yrs 2&3

Scenario Description:

The acquisition and use of additional aquaculture gear and biofouling control on 1 acre of bivalves, usually clams that are seeded in the substrate, in intertidal marine areas where biofouling of aquaculture production gear occurs. The biofouled gear is removed from the farm site and taken on land to be cleaned using environmentally appropriate biofoul control methods, including but not limited to air drying, brine dip, vinegar dip, fresh water dip, sweeping, power washing, and/or a combination of the aforementioned methods. The gear is cleaned and stored on land at an acceptable location, such as a heavy use area suitable for the size and intensity of the aquaculture operation. The planned practice will meet the current 400 conservation practice standard. Implementation will result in the proper rate, method and timing of gear and biofouling controls, including increased level of monitoring, frequency of cleaning, cycling/rotating and hauling gear, disposing of waste gear, and keeping records demonstrating implementation of the 400 criteria. Payment for implementation is to defray the costs of increased labor above normal operating procedures and recordkeeping for the first year of the growth cycle.

Before Situation:

Aquaculture gear (predator exclusion apparatus) is overgrown with biofouling organisms; water flow and food supply is significantly reduced endangering shellfish health and growth. Increased drag increases risk of gear escaping into the marine environment; escaped gear presents entanglement hazards to marine wildlife. Organic loading and aquatic nuisance species release are negative impacts of in-water gear cleaning activities.

After Situation:

The aquaculturist has additional gear (approximately 20%) which is cycled with biofouled gear in the water. The biofouled gear is cleaned using environmentally appropriate biofoul control methods, including but not limited to air drying, brine dip, vinegar dip, fresh water dip, sweeping, power washing, or a combination of methods. The gear is cleaned and stored on land at an acceptable location for the size and intensity of the aquaculture operation. Damaged gear is removed from the farm site and transported on shore for proper disposal. Records documenting the cycling of gear are maintained. Additional conservation practices such as 561- Heavy Use Area, and 422- Hedgerow Planting should be considered and planned under the respective scenarios. The material removed from the cage will be land applied, composted, or land filled as appropriate. The influx of biofouling to the marine environment as a result of cleaning gear is eliminated.

Scenario Feature Measure: 20 beds/acre; 900sf/bed

Scenario Unit: Acre

Scenario Typical Size: 1

Scenario Cost: $395.84 **Scenario Cost/Unit:** $395.84

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price ($/unit)	Quantity	Cost
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	$24.74	16	$395.84

Practice: 400 - Bivalve Aquaculture Gear and Biofouling Control

Scenario: #3 - Infaunal Culture Yr-1, non-reuseable

Scenario Description:

The acquisition and use of additional aquaculture gear and biofouling control on 1 acre of bivalaves, usually clams that are seeded in the substrate, in intertidal marine areas where biofouling of aquaculture production gear occurs. The biofouled gear is removed from the farm site and taken on land for disposal. The planned practice will meet the current 400 conservation practice standard. Implementation will result in the proper rate, method and timing of gear and biofouling controls, including increased level of monitoring, frequency of cleaning, cycling/rotating and hauling gear, disposing of waste gear, and keeping records demonstrating implementation of the 400 criteria. Payment for implementation is to defray the costs of redundant gear, increased labor above normal operating procedures and recordkeeping for the growth cycle.

Before Situation:

Aquaculture gear (predator exclusion apparatus) is overgrown with biofouling organisms; water flow and food supply is significantly reduced endangering shellfish health and growth. Increased drag increases risk of gear escaping into the marine environment; escaped gear presents entanglement hazards to marine wildlife. Organic loading and aquatic nuisance species release are negative impacts of in-water gear cleaning activities.

After Situation:

The aquaculturist has additional gear (100 %) which is cycled with biofouled gear in the water. The biofouled gear is transported to land for disposal. Records documenting the cycling of gear are maintained. Additional conservation practices such as 561- Heavy Use Area, and 422- Hedgerow Planting should be considered and planned under the respective scenarios. The material removed from the cage will be land applied, composted, or land filled as appropriate. The influx of biofouling to the marine environment as a result of cleaning gear is eliminated.

Scenario Feature Measure: 20 beds/acre; 900sf/bed

Scenario Unit: Acre

Scenario Typical Size: 1

Scenario Cost: $10,673.76 **Scenario Cost/Unit:** $10,673.76

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price ($/unit)	Quantity	Cost
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	$24.74	24	$593.76
Materials						
Shellfish Predation Netting, seed in-ground culture	1890	Preditor control netting for clams, soft mesh polyethylene, 1/4" - 1/2" mesh sizes; typical width is 14', lengths vary from 20' to 150'. Includes materials and shipping only.	Square Foot	$0.56	18000	$10,080.00

Practice: 400 - Bivalve Aquaculture Gear and Biofouling Control

Scenario: #4 - Epifaunal-Bags Only-Yr.1

Scenario Description:

The acquisition and use of additional aquaculture gear to cycle with production gear in near-shore, intertidal and sub tidal marine areas where biofouling of aquaculture production gear occurs. The cultured organisms are transferred from the biofouled gear to the "clean gear" and returned to the water. The biofouled gear is removed from the farm site and taken on land to be cleaned using environmentally appropriate biofoul control methods, including but not limited to air drying, brine dip, vinegar dip, fresh water dip, sweeping, power washing, and/or a combination of the aforementioned methods. The gear is cleaned and stored on land at an acceptable location, such as a heavy use area suitable for the size and intensity of the aquaculture operation. The planned practice will meet the current 400 conservation practice standard. Implementation will result in the proper rate, method and timing of gear and biofouling controls, including increased level of monitoring, frequency of cleaning, cycling/rotating and hauling gear, disposing of waste gear, and keeping records demonstrating implementation of the 400 criteria. Payment for implementation is to defray the costs of redundant gear, increased labor above normal operating procedures and recordkeeping for the first year of the growth cycle.

Before Situation:

Aquaculture gear (preditor exclusion apparatus) is overgrown with biofouling organisms; water flow and food supply is significantly reduced endagering shellfish health and growth. Increased drag increases risk of gear escaping into the marine environment; escaped gear presents entanglement hazards to marine wildlife. Organic loading and aquatic nuisance species release are negative impacts of in-water gear cleaning activities.

After Situation:

The aquaculturist has additional gear (approximately 20%) which is cycled with biofouled gear in the water. The biofouled gear is cleaned using environmentally appropriate biofoul control methods, including but not limited to air drying, brine dip, vinegar dip, fresh water dip, sweeping, power washing, or a combination of methods. The gear is cleaned and stored on land at an acceptable location for the size and intensity of the aquaculture operation. Damaged gear is removed from the farm site and transported on shore for proper disposal. Records documenting the cycling of gear are maintained. Additional conservation practices such as 561- Heavy Use Area, and 422- Hedgerow Planting should be considered and planned under the respective scenarios. The material removed from the cage will be land applied, composted, or land filled as appropriate. The influx of biofouling to the marine environment as a result of cleaning gear is eliminated.

Scenario Feature Measure: 50,000 bivalves

Scenario Unit: Each

Scenario Typical Size: 1

Scenario Cost: $769.97 **Scenario Cost/Unit:** $769.97

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price ($/unit)	Quantity	Cost
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	$24.74	28	$692.72
Materials						
Shellfish growout bags	2004	Oyster mesh bags (i.e. Vexar, Intermas), 1/4", 1/2", and 1" mesh sizes, typically 50 x 100 cm. Includes materials and shipping only.	Each	$5.15	15	$77.25

Practice: 400 - Bivalve Aquaculture Gear and Biofouling Control

Scenario: #5 - Epifaunal-Bags Only-Yrs.2&3

Scenario Description:

The acquisition and use of additional aquaculture gear to cycle with production gear in near-shore, intertidal and sub tidal marine areas where biofouling of aquaculture production gear occurs. The cultured organisms are transferred from the biofouled gear to the "clean gear" and returned to the water. The biofouled gear is removed from the farm site and taken on land to be cleaned using environmentally appropriate biofoul control methods, including but not limited to air drying, brine dip, vinegar dip, fresh water dip, sweeping, power washing, and/or a combination of the aforementioned methods. The gear is cleaned and stored on land at an acceptable location, such as a heavy use area suitable for the size and intensity of the aquaculture operation. The planned practice will meet the current 400 conservation practice standard. Implementation will result in the proper rate, method and timing of gear and biofouling controls, including increased level of monitoring, frequency of cleaning, cycling/rotating and hauling gear, disposing of waste gear, and keeping records demonstrating implementation of the 400 criteria. Payment for implementation is to defray the costs of increased labor above normal operating procedures and recordkeeping for the second and third year of the growth cycle.

Before Situation:

Aquaculture gear (preditor exclusion apparatus) is overgrown with biofouling organisms; water flow and food supply is significantly reduced endagering shellfish health and growth. Increased drag increases risk of gear escaping into the marine environment; escaped gear presents entanglement hazards to marine wildlife. Organic loading and aquatic nuisance species release are negative impacts of in-water gear cleaning activities.

After Situation:

The aquaculturist has additional gear (approximately 20%) which is cycled with biofouled gear in the water. The biofouled gear is cleaned using environmentally appropriate biofoul control methods, including but not limited to air drying, brine dip, vinegar dip, fresh water dip, sweeping, power washing, or a combination of methods. The gear is cleaned and stored on land at an acceptable location for the size and intensity of the aquaculture operation. Damaged gear is removed from the farm site and transported on shore for proper disposal. Records documenting the cycling of gear are maintained. Additional conservation practices such as 561- Heavy Use Area, and 422- Hedgerow Planting should be considered and planned under the respective scenarios. The material removed from the cage will be land applied, composted, or land filled as appropriate. The influx of biofouling to the marine environment as a result of cleaning gear is eliminated.

Scenario Feature Measure: 50,000 bivalves

Scenario Unit: Each

Scenario Typical Size: 1

Scenario Cost: $519.54 **Scenario Cost/Unit:** $519.54

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price ($/unit)	Quantity	Cost
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	$24.74	21	$519.54

Practice: 400 - Bivalve Aquaculture Gear and Biofouling Control

Scenario: #6 - Epifaunal-Single Cage-Yr.1

Scenario Description:

The acquisition and use of additional aquaculture gear to cycle with production gear in near-shore, intertidal and sub tidal marine areas where biofouling of aquaculture production gear occurs. The cultured organisms are transferred from the biofouled gear to the "clean gear" and returned to the water. The biofouled gear is removed from the farm site and taken on land to be cleaned using environmentally appropriate biofoul control methods, including but not limited to air drying, brine dip, vinegar dip, fresh water dip, sweeping, power washing, and/or a combination of the aforementioned methods. The gear is cleaned and stored on land at an acceptable location, such as a heavy use area suitable for the size and intensity of the aquaculture operation. The planned practice will meet the current 400 conservation practice standard. Implementation will result in the proper rate, method and timing of gear and biofouling controls, including increased level of monitoring, frequency of cleaning, cycling/rotating and hauling gear, disposing of waste gear, and keeping records demonstrating implementation of the 400 criteria. Payment for implementation is to defray the costs of redundant gear, increased labor above normal operating procedures and recordkeeping for the first year of the growth cycle.

Before Situation:

Aquaculture gear (predator exclusion apparatus) is overgrown with biofouling organisms; water flow and food supply is significantly reduced endangering shellfish health and growth. Increased drag increases risk of gear escaping into the marine environment; escaped gear presents entanglement hazards to marine wildlife. Organic loading and aquatic nuisance species release are negative impacts of in-water gear cleaning activities.

After Situation:

The aquaculturist has additional gear (approximately 20%) which is cycled with biofouled gear in the water. The biofouled gear is cleaned using environmentally appropriate biofoul control methods, including but not limited to air drying, brine dip, vinegar dip, fresh water dip, sweeping, power washing, or a combination of methods. The gear is cleaned and stored on land at an acceptable location for the size and intensity of the aquaculture operation. Damaged gear is removed from the farm site and transported on shore for proper disposal. Records documenting the cycling of gear are maintained. Additional conservation practices such as 561- Heavy Use Area, and 422-Hedgerow Planting should be considered and planned under the respective scenarios. The material removed from the cage will be land applied, composted, or land filled as appropriate. The influx of biofouling to the marine environment as a result of cleaning gear is eliminated.

Scenario Feature Measure: 50,000 bivalves

Scenario Unit: Each

Scenario Typical Size: 1

Scenario Cost: $4,915.97 **Scenario Cost/Unit:** $4,915.97

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price ($/unit)	Quantity	Cost
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	$24.74	28	$692.72
Materials						
Shellfish growout bags	2004	Oyster mesh bags (i.e. Vexar, Intermas), 1/4", 1/2", and 1" mesh sizes, typically 50 x 100 cm. Includes materials and shipping only.	Each	$5.15	15	$77.25
Shellfish cages, single layer	2007	Oyster trays and cages , 300-900 single layer oyster cages. Includes materials and shipping only.	Each	$55.28	75	$4,146.00

Practice: 400 - Bivalve Aquaculture Gear and Biofouling Control

Scenario: #7 - Epifaunal-Double Cage-Yr.1

Scenario Description:

The acquisition and use of additional aquaculture gear to cycle with production gear in near-shore, intertidal and sub tidal marine areas where biofouling of aquaculture production gear occurs. The cultured organisms are transferred from the biofouled gear to the "clean gear" and returned to the water. The biofouled gear is removed from the farm site and taken on land to be cleaned using environmentally appropriate biofoul control methods, including but not limited to air drying, brine dip, vinegar dip, fresh water dip, sweeping, power washing, and/or a combination of the aforementioned methods. The gear is cleaned and stored on land at an acceptable location, such as a heavy use area suitable for the size and intensity of the aquaculture operation. The planned practice will meet the current 400 conservation practice standard. Implementation will result in the proper rate, method and timing of gear and biofouling controls, including increased level of monitoring, frequency of cleaning, cycling/rotating and hauling gear, disposing of waste gear, and keeping records demonstrating implementation of the 400 criteria. Payment for implementation is to defray the costs of redundant gear, increased labor above normal operating procedures and recordkeeping for the first year of the growth cycle.

Before Situation:

Aquaculture gear (predator exclusion apparatus) is overgrown with biofouling organisms; water flow and food supply is significantly reduced endangering shellfish health and growth. Increased drag increases risk of gear escaping into the marine environment; escaped gear presents entanglement hazards to marine wildlife. Organic loading and aquatic nuisance species release are negative impacts of in-water gear cleaning activities.

After Situation:

The aquaculturist has additional gear (approximately 20%) which is cycled with biofouled gear in the water. The biofouled gear is cleaned using environmentally appropriate biofoul control methods, including but not limited to air drying, brine dip, vinegar dip, fresh water dip, sweeping, power washing, or a combination of methods. The gear is cleaned and stored on land at an acceptable location for the size and intensity of the aquaculture operation. Damaged gear is removed from the farm site and transported on shore for proper disposal. Records documenting the cycling of gear are maintained. Additional conservation practices such as 561- Heavy Use Area, and 422-Hedgerow Planting should be considered and planned under the respective scenarios. The material removed from the cage will be land applied, composted, or land filled as appropriate. The influx of biofouling to the marine environment as a result of cleaning gear is eliminated.

Scenario Feature Measure: 50,000 bivalves

Scenario Unit: Each

Scenario Typical Size: 1

Scenario Cost: $5,931.97 **Scenario Cost/Unit:** $5,931.97

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price ($/unit)	Quantity	Cost
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	$24.74	28	$692.72
Materials						
Shellfish cages, double layer	2008	Oyster trays and cages 600-1800 double layer oyster cages. Includes materials and shipping only.	Each	$103.24	50	$5,162.00
Shellfish growout bags	2004	Oyster mesh bags (i.e. Vexar, Intermas), 1/4", 1/2", and 1" mesh sizes, typically 50 x 100 cm. Includes materials and shipping only.	Each	$5.15	15	$77.25

Practice: 400 - Bivalve Aquaculture Gear and Biofouling Control

Scenario: #8 - Epifaunal-Triple Cage-Yr.1

Scenario Description:

The acquisition and use of additional aquaculture gear to cycle with production gear in near-shore, intertidal and sub tidal marine areas where biofouling of aquaculture production gear occurs. The cultured organisms are transferred from the biofouled gear to the "clean gear" and returned to the water. The biofouled gear is removed from the farm site and taken on land to be cleaned using environmentally appropriate biofoul control methods, including but not limited to air drying, brine dip, vinegar dip, fresh water dip, sweeping, power washing, and/or a combination of the aforementioned methods. The gear is cleaned and stored on land at an acceptable location, such as a heavy use area suitable for the size and intensity of the aquaculture operation. The planned practice will meet the current 400 conservation practice standard. Implementation will result in the proper rate, method and timing of gear and biofouling controls, including increased level of monitoring, frequency of cleaning, cycling/rotating and hauling gear, disposing of waste gear, and keeping records demonstrating implementation of the 400 criteria. Payment for implementation is to defray the costs of redundant gear, increased labor above normal operating procedures and recordkeeping for the first year of the growth cycle.

Before Situation:

Aquaculture gear (predator exclusion apparatus) is overgrown with biofouling organisms; water flow and food supply is significantly reduced endangering shellfish health and growth. Increased drag increases risk of gear escaping into the marine environment; escaped gear presents entanglement hazards to marine wildlife. Organic loading and aquatic nuisance species release are negative impacts of in-water gear cleaning activities.

After Situation:

The aquaculturist has additional gear (approximately 20%) which is cycled with biofouled gear in the water. The biofouled gear is cleaned using environmentally appropriate biofoul control methods, including but not limited to air drying, brine dip, vinegar dip, fresh water dip, sweeping, power washing, or a combination of methods. The gear is cleaned and stored on land at an acceptable location for the size and intensity of the aquaculture operation. Damaged gear is removed from the farm site and transported on shore for proper disposal. Records documenting the cycling of gear are maintained. Additional conservation practices such as 561- Heavy Use Area, and 422-Hedgerow Planting should be considered and planned under the respective scenarios. The material removed from the cage will be land applied, composted, or land filled as appropriate. The influx of biofouling to the marine environment as a result of cleaning gear is eliminated.

Scenario Feature Measure: 50,000 bivalves

Scenario Unit: Each

Scenario Typical Size: 1

Scenario Cost: $6,747.97 **Scenario Cost/Unit:** $6,747.97

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price ($/unit)	Quantity	Cost
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	$24.74	28	$692.72
Materials						
Shellfish growout bags	2004	Oyster mesh bags (i.e. Vexar, Intermas), 1/4", 1/2", and 1" mesh sizes, typically 50 x 100 cm. Includes materials and shipping only.	Each	$5.15	15	$77.25
Shellfish cages, triple layer	2009	Oyster trays and cages, 900-2700 triple layer oyster cages. Includes materials and shipping only.	Each	$149.45	40	$5,978.00

Practice: 400 - Bivalve Aquaculture Gear and Biofouling Control

Scenario: #9 - Epifaunal-Rack&Cage&Bags-Yr.1

Scenario Description:

The acquisition and use of additional aquaculture gear to cycle with production gear in near-shore, intertidal and sub tidal marine areas where biofouling of aquaculture production gear occurs. The cultured organisms are transferred from the biofouled gear to the "clean gear" and returned to the water. The biofouled gear is removed from the farm site and taken on land to be cleaned using environmentally appropriate biofoul control methods, including but not limited to air drying, brine dip, vinegar dip, fresh water dip, sweeping, power washing, and/or a combination of the aforementioned methods. The gear is cleaned and stored on land at an acceptable location, such as a heavy use area suitable for the size and intensity of the aquaculture operation. The planned practice will meet the current 400 conservation practice standard. Implementation will result in the proper rate, method and timing of gear and biofouling controls, including increased level of monitoring, frequency of cleaning, cycling/rotating and hauling gear, disposing of waste gear, and keeping records demonstrating implementation of the 400 criteria. Payment for implementation is to defray the costs of redundant gear, increased labor above normal operating procedures and recordkeeping for the first year of the growth cycle.

Before Situation:

Aquaculture gear (predator exclusion apparatus) is overgrown with biofouling organisms; water flow and food supply is significantly reduced endangering shellfish health and growth. Increased drag increases risk of gear escaping into the marine environment; escaped gear presents entanglement hazards to marine wildlife. Organic loading and aquatic nuisance species release are negative impacts of in-water gear cleaning activities.

After Situation:

The aquaculturist has additional gear (approximately 20%) which is cycled with biofouled gear in the water. The biofouled gear is cleaned using environmentally appropriate biofoul control methods, including but not limited to air drying, brine dip, vinegar dip, fresh water dip, sweeping, power washing, or a combination of methods. The gear is cleaned and stored on land at an acceptable location for the size and intensity of the aquaculture operation. Damaged gear is removed from the farm site and transported on shore for proper disposal. Records documenting the cycling of gear are maintained. Additional conservation practices such as 561- Heavy Use Area, and 422-Hedgerow Planting should be considered and planned under the respective scenarios. The material removed from the cage will be land applied, composted, or land filled as appropriate. The influx of biofouling to the marine environment as a result of cleaning gear is eliminated.

Scenario Feature Measure: 50,000 bivalves

Scenario Unit: Each

Scenario Typical Size: 1

Scenario Cost: $4,984.37 **Scenario Cost/Unit:** $4,984.37

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price ($/unit)	Quantity	Cost
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	$24.74	28	$692.72
Materials						
Shellfish growout bags	2004	Oyster mesh bags (i.e. Vexar, Intermas), 1/4", 1/2", and 1" mesh sizes, typically 50 x 100 cm. Includes materials and shipping only.	Each	$5.15	15	$77.25
Shellfish cages, bottom, rack or bag in cage systems	2006	Wire mesh shellfish growout cages 2'x3', 3'x3', 3'x4' wire cages, 6mm, 12mm, 18mm, 25mm mesh sizes. Deployed on bottom or racks, or bags and cage. Includes materials and shipping only.	Each	$105.36	40	$4,214.40

Practice: 400 - Bivalve Aquaculture Gear and Biofouling Control

Scenario: #10 - Epifaunal-Cage Cycling-Yrs.2&3

Scenario Description:

The acquisition and use of additional aquaculture gear to cycle with production gear in near-shore, intertidal and sub tidal marine areas where biofouling of aquaculture production gear occurs. The cultured organisms are transferred from the biofouled gear to the "clean gear" and returned to the water. The biofouled gear is removed from the farm site and taken on land to be cleaned using environmentally appropriate biofoul control methods, including but not limited to air drying, brine dip, vinegar dip, fresh water dip, sweeping, power washing, and/or a combination of the aforementioned methods. The gear is cleaned and stored on land at an acceptable location, such as a heavy use area suitable for the size and intensity of the aquaculture operation. The planned practice will meet the current 400 conservation practice standard. Implementation will result in the proper rate, method and timing of gear and biofouling controls, including increased level of monitoring, frequency of cleaning, cycling/rotating and hauling gear, disposing of waste gear, and keeping records demonstrating implementation of the 400 criteria. Payment for implementation is to defray the costs of increased labor above normal operating procedures and recordkeeping for the second and third year of the growth cycle.

Before Situation:

Aquaculture gear (predator exclusion apparatus) is overgrown with biofouling organisms; water flow and food supply is significantly reduced endangering shellfish health and growth. Increased drag increases risk of gear escaping into the marine environment; escaped gear presents entanglement hazards to marine wildlife. Organic loading and aquatic nuisance species release are negative impacts of in-water gear cleaning activities.

After Situation:

The aquaculturist has additional gear (approximately 20%) which is cycled with biofouled gear in the water. The biofouled gear is cleaned using environmentally appropriate biofoul control methods, including but not limited to air drying, brine dip, vinegar dip, fresh water dip, sweeping, power washing, or a combination of methods. The gear is cleaned and stored on land at an acceptable location for the size and intensity of the aquaculture operation. Damaged gear is removed from the farm site and transported on shore for proper disposal. Records documenting the cycling of gear are maintained. Additional conservation practices such as 561- Heavy Use Area, and 422-Hedgerow Planting should be considered and planned under the respective scenarios. The material removed from the cage will be land applied, composted, or land filled as appropriate. The influx of biofouling to the marine environment as a result of cleaning gear is eliminated.

Scenario Feature Measure: 50,000 bivalves

Scenario Unit: Each

Scenario Typical Size: 1

Scenario Cost: $1,929.72 **Scenario Cost/Unit:** $1,929.72

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price ($/unit)	Quantity	Cost
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	$24.74	78	$1,929.72

Practice: 400 - Bivalve Aquaculture Gear and Biofouling Control

Scenario: #11 - Epifaunal-Trip- Cage Cyc-Yrs.2&3

Scenario Description:

The acquisition and use of additional aquaculture gear to cycle with production gear in near-shore, intertidal and sub tidal marine areas where biofouling of aquaculture production gear occurs. The cultured organisms are transferred from the biofouled gear to the "clean gear" and returned to the water. The biofouled gear is removed from the farm site and taken on land to be cleaned using environmentally appropriate biofoul control methods, including but not limited to air drying, brine dip, vinegar dip, fresh water dip, sweeping, power washing, and/or a combination of the aforementioned methods. The gear is cleaned and stored on land at an acceptable location, such as a heavy use area suitable for the size and intensity of the aquaculture operation. The planned practice will meet the current 400 conservation practice standard. Implementation will result in the proper rate, method and timing of gear and biofouling controls, including increased level of monitoring, frequency of cleaning, cycling/rotating and hauling gear, disposing of waste gear, and keeping records demonstrating implementation of the 400 criteria. Payment for implementation is to defray the costs of increased labor above normal operating procedures and recordkeeping for the second and third year of the growth cycle.

Before Situation:

Aquaculture gear (predator exclusion apparatus) is overgrown with biofouling organisms; water flow and food supply is significantly reduced endangering shellfish health and growth. Increased drag increases risk of gear escaping into the marine environment; escaped gear presents entanglement hazards to marine wildlife. Organic loading and aquatic nuisance species release are negative impacts of in-water gear cleaning activities.

After Situation:

The aquaculturist has additional gear (approximately 20%) which is cycled with biofouled gear in the water. The biofouled gear is cleaned using environmentally appropriate biofoul control methods, including but not limited to air drying, brine dip, vinegar dip, fresh water dip, sweeping, power washing, or a combination of methods. The gear is cleaned and stored on land at an acceptable location for the size and intensity of the aquaculture operation. Damaged gear is removed from the farm site and transported on shore for proper disposal. Records documenting the cycling of gear are maintained. Additional conservation practices such as 561- Heavy Use Area, and 422- Hedgerow Planting should be considered and planned under the respective scenarios. The material removed from the cage will be land applied, composted, or land filled as appropriate. The influx of biofouling to the marine environment as a result of cleaning gear is eliminated.

Scenario Feature Measure: 50,000 bivalves

Scenario Unit: Each

Scenario Typical Size: 1

Scenario Cost: $1,039.08 **Scenario Cost/Unit:** $1,039.08

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price ($/unit)	Quantity	Cost
Labor						
General Labor	231	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hour	$24.74	42	$1,039.08